

APPENDIX L. FINAL QUANTITATIVE RANKING OF 172 VITAL SIGNS.

Table 1. Final quantitative ranking of 172 vital signs. The overall score is based here on a weighting of .3 for Ecological and Management significance, .2 for relevancy of the vital sign to the monitoring question, and .2 for cost and feasibility. Although ranking scores were developed for legal mandate as shown, they were not used.

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
1	What are the trends in distribution and abundance of non-native species through time?	3.43	3.46	3.44	non-native plants	3.29	3.00	4.00	3.52
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	amphibians	3.16	2.00	4.00	3.39
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	old growth forest	3.06	4.00	4.00	3.39
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	song bird communities	3.03	2.00	4.00	3.38
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	Redwood forest	2.97	4.00	4.00	3.37
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	riparian plant communities	2.87	2.00	4.00	3.35
5	What are status and trends in focal species?	3.22	3.28	3.25	keystone plants (e.g. Aspen, whitebark pine)	2.97	1.00	4.00	3.34

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5	What are status and trends in focal species?	3.22	3.28	3.25	keystone mammals	2.91	1.00	4.00	3.33
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	Intertidal communities	2.76	2.00	4.00	3.33
5	What are status and trends in focal species?	3.22	3.28	3.25	keystone birds	2.88	1.00	4.00	3.33
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	Ponderosa pine forest	2.70	1.00	4.00	3.32
5	What are status and trends in focal species?	3.22	3.28	3.25	keystone fish	2.81	1.00	4.00	3.31
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	fish assemblages	2.75	2.00	4.00	3.31
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	shrublands	2.63	2.00	4.00	3.30
6	What are status and trends in surface waters?	3.26	3.07	3.16	surface water temperature	3.00	4.00	4.00	3.30
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	human visitation levels	2.97	2.00	4.00	3.28
10	How are connectivity, fragmentation, and level of park "insularity" changing with land use change in and around the parks?	3.20	3.00	3.10	land cover	3.12	3.00	4.00	3.28
6	What are status and trends in	3.26	3.07	3.16	surface water	2.92	4.00	4.00	3.28

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
	surface waters?				contaminants				
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	land birds	2.59	2.00	4.00	3.28
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	water birds	2.59	2.00	4.00	3.28
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	pollutants (organic, including hydrocarbon fuel, oil)	2.96	4.00	4.00	3.28
6	What are status and trends in surface waters?	3.26	3.07	3.16	surface water flow	2.88	3.00	4.00	3.27
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	marine mammals	2.57	4.00	4.00	3.27
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	terrestrial vehicle traffic	2.91	2.00	4.00	3.27
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	estuarine aquatic plants	2.48	2.00	4.00	3.27
6	What are status and trends in surface waters?	3.26	3.07	3.16	surface water chemistry	2.85	4.00	4.00	3.27
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	freshwater plants	2.46	2.00	4.00	3.27
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	land mammals	2.52	2.00	4.00	3.26
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	pollutants inorganic	2.88	4.00	4.00	3.26

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	foot trampling evidence	2.82	1.00	4.00	3.25
11	What are the long term trends in the predominant habitat types?	3.18	2.89	3.04	cover of habitat types	3.15	1.00	4.00	3.25
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	Second growth forest	2.38	2.00	4.00	3.25
10	How are connectivity, fragmentation, and level of park "insularity" changing with land use change in and around the parks?	3.20	3.00	3.10	land use (in and around park)	2.94	3.00	4.00	3.25
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	tide pool condition	2.76	2.00	4.00	3.24
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	Native grasses	2.41	2.00	4.00	3.24
1	What are the trends in distribution and abundance of non-native species through time?	3.43	3.46	3.44	non-native vertebrates	2.85	3.00	3.00	3.24
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	coliform bacteria	2.75	4.00	4.00	3.24
10	How are connectivity, fragmentation, and level of park "insularity" changing with land use change in and around the parks?	3.20	3.00	3.10	road density	2.85	2.00	4.00	3.23

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
10	How are connectivity, fragmentation, and level of park "insularity" changing with land use change in and around the parks?	3.20	3.00	3.10	landscape pattern	2.85	2.00	4.00	3.23
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	reptiles	2.34	2.00	4.00	3.23
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	early successional communities	2.26	2.00	4.00	3.23
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	dissolved oxygen	2.68	4.00	4.00	3.22
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	pollutants	3.22	4.00	4.00	3.19
3	What are the status and trends in anthropogenic disturbance?	3.21	3.35	3.28	human disturbance dynamics-terrestrial	3.10	1.00	3.00	3.19
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	turbidity	2.44	4.00	4.00	3.17
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	debris or oil on seabirds (carcasses)	2.36	4.00	4.00	3.16
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	special botanical areas (e.g. Little Bald Hills, Puccinellia springs)	2.86	3.00	3.00	3.15
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	freshwater invertebrates	2.93	3.00	3.00	3.15
11	What are the long term trends in	3.18	2.89	3.04	vegetation dynamics	2.61	1.00	4.00	3.14

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	the predominant habitat types?								
3	What are the status and trends in anthropogenic disturbance?	3.21	3.35	3.28	human disturbance dynamics-riverine	2.86	1.00	3.00	3.14
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	kelp forest	2.81	1.00	3.00	3.14
5	What are status and trends in focal species?	3.22	3.28	3.25	sensitive birds (e.g. common murres)	2.88	2.00	3.00	3.13
5	What are status and trends in focal species?	3.22	3.28	3.25	sensitive plants	2.87	2.00	3.00	3.12
3	What are the status and trends in anthropogenic disturbance?	3.21	3.35	3.28	human disturbance dynamics-subterranean	2.71	3.00	3.00	3.11
5	What are status and trends in focal species?	3.22	3.28	3.25	sensitive fish (e.g. flat fish)	2.79	2.00	3.00	3.11
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	freshwater mussels	2.73	4.00	3.00	3.10
7	What are the status and trends in natural disturbance events (e.g. fire, floods)?	3.28	3.03	3.15	riverine disturbance dynamics	3.03	1.00	3.00	3.10
7	What are the status and trends in natural disturbance events (e.g. fire, floods)?	3.28	3.03	3.15	terrestrial disturbance dynamics	3.03	1.00	3.00	3.10
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	cave species	2.61	2.00	3.00	3.10
5	What are status and trends in focal species?	3.22	3.28	3.25	sensitive mammals (e.g. pika)	2.73	2.00	3.00	3.10
4	What are status and trends in	3.38	3.15	3.26	bats	2.66	2.00	3.00	3.09

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	focal taxa groups?								
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	Chlorophyll	2.00	4.00	4.00	3.09
5	What are status and trends in focal species?	3.22	3.28	3.25	keystone marine species (e.g. bull kelp)	2.66	1.00	3.00	3.08
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	marine invertebrates	2.60	2.00	3.00	3.08
6	What are status and trends in surface waters?	3.26	3.07	3.16	ephemeral features (streams, pools, snow melt beds)	2.88	3.00	3.00	3.07
5	What are status and trends in focal species?	3.22	3.28	3.25	sensitive marine species	2.61	2.00	3.00	3.07
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	acid deposition	2.58	4.00	4.00	3.07
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	marine algae	2.53	2.00	3.00	3.06
2	What are status and trends in structure, function, and composition of focal communities?	3.44	3.14	3.29	cave entrance community	2.44	2.00	3.00	3.06
6	What are status and trends in surface waters?	3.26	3.07	3.16	springs	2.80	4.00	3.00	3.06
1	What are the trends in distribution and abundance of non-native species through time?	3.43	3.46	3.44	non-native diseases	2.94	3.00	2.00	3.05
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	water birds	1.80	2.00	4.00	3.05

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18	How are snowpack dynamics changing over time?	3.03	2.31	2.67	snowpack duration	3.09	1.00	4.00	3.02
1	What are the trends in distribution and abundance of non-native species through time?	3.43	3.46	3.44	non-native invertebrates	2.71	3.00	2.00	3.01
18	How are snowpack dynamics changing over time?	3.03	2.31	2.67	snowpack spatial extent	2.94	1.00	4.00	2.99
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	cave formations	2.48	3.00	3.00	2.99
14	Are climate associated ecotones changing through time?	3.13	2.28	2.70	elevational vegetation boundaries (e.g. treeline)	2.81	1.00	4.00	2.98
16	Have rates, extent, location, or types of erosional and depositional processes changed?	2.76	2.59	2.68	turbidity	2.85	4.00	4.00	2.98
15	What are the trends in harvesting of park resources?	2.49	2.87	2.68	commercial fishing	2.84	3.00	4.00	2.97
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	wildlife migration	2.40	2.00	3.00	2.97
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	snowpack chemistry	2.85	4.00	3.00	2.92
16	Have rates, extent, location, or types of erosional and depositional processes changed?	2.76	2.59	2.68	bank erosion	2.54	1.00	4.00	2.91
17	What are the trends in diseases or parasites (including forest insects) through time?	2.92	2.42	2.67	plant mortality	2.50	1.00	4.00	2.90

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3	What are the status and trends in anthropogenic disturbance?	3.21	3.35	3.28	human disturbance dynamics-marine	2.64	1.00	2.00	2.90
3	What are the status and trends in anthropogenic disturbance?	3.21	3.35	3.28	human disturbance dynamics-lacustrine	2.64	1.00	2.00	2.90
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	Bryophytes and lichens	2.64	1.00	2.00	2.89
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	insects	2.63	2.00	2.00	2.88
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	amphibians (tissue sampling)	2.65	3.00	3.00	2.88
22	How is woody debris production and storage changing over time?	2.62	2.31	2.46	riparian woody debris	3.00	1.00	4.00	2.88
15	What are the trends in harvesting of park resources?	2.49	2.87	2.68	populations prone to poaching (e.g. Roosevelt elk)	2.30	3.00	4.00	2.87
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	lichens	2.53	3.00	3.00	2.85
22	How is woody debris production and storage changing over time?	2.62	2.31	2.46	terrestrial woody debris	2.86	1.00	4.00	2.85
5	What are status and trends in focal species?	3.22	3.28	3.25	rare birds (e.g. brown pelican)	2.48	4.00	2.00	2.85
5	What are status and trends in focal species?	3.22	3.28	3.25	rare mammals (e.g. stellar's sea lion)	2.48	4.00	2.00	2.85
5	What are status and trends in focal species?	3.22	3.28	3.25	rare fish (e.g. salmonids)	2.48	4.00	2.00	2.85
20	What is timing and duration of key climate-related phenological events?	2.95	2.05	2.50	bud break	2.69	0.00	4.00	2.84
5	What are status and trends in	3.22	3.28	3.25	rare plants	2.37	4.00	2.00	2.82

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	focal species?								
20	What is timing and duration of key climate-related phenological events?	2.95	2.05	2.50	flowering	2.61	1.00	4.00	2.82
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	aquatic species composition	2.34	2.00	3.00	2.82
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	threatened and endangered species	2.61	4.00	2.00	2.81
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	water craft traffic	2.58	1.00	2.00	2.81
5	What are status and trends in focal species?	3.22	3.28	3.25	rare marine species	2.26	4.00	2.00	2.80
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	pollution sensitive trees	2.19	2.00	3.00	2.79
18	How are snowpack dynamics changing over time?	3.03	2.31	2.67	snowpack depth	2.91	1.00	3.00	2.78
7	What are the status and trends in natural disturbance events (e.g. fire, floods)?	3.28	3.03	3.15	subterranean disturbance dynamics	2.38	3.00	2.00	2.77
22	How is woody debris production and storage changing over time?	2.62	2.31	2.46	intertidal woody debris (beach)	2.37	1.00	4.00	2.75
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	sea bird behavior	2.31	2.00	2.00	2.75

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7	What are the status and trends in natural disturbance events (e.g. fire, floods)?	3.28	3.03	3.15	lacustrine (lake) disturbance dynamic	2.29	1.00	2.00	2.75
9	What are status and trends in pollutants (chemicals, nutrients, effluents, and trash)?	3.08	3.20	3.14	marine mammals with oil or attached debris	2.29	4.00	2.00	2.74
8	What are status and trends in human impacts near sensitive plant and animal populations and habitats?	3.03	3.28	3.15	marine mammal behavior	2.22	2.00	2.00	2.73
7	What are the status and trends in natural disturbance events (e.g. fire, floods)?	3.28	3.03	3.15	marine disturbance dynamics	2.16	1.00	2.00	2.72
16	Have rates, extent, location, or types of erosional and depositional processes changed?	2.76	2.59	2.68	gully formation	2.59	1.00	3.00	2.72
21	How is sea level and ocean temperature changing?	3.00	2.00	2.50	Sea level (max & min tides)	3.00	1.00	3.00	2.70
14	Are climate associated ecotones changing through time?	3.13	2.28	2.70	intertidal boundaries	2.38	2.00	3.00	2.70
21	How is sea level and ocean temperature changing?	3.00	2.00	2.50	ocean temperatures	2.88	1.00	3.00	2.68
19	How is cave air flow (quantity and quality) changing through time?	2.60	2.48	2.54	air flow in caves	2.76	1.00	3.00	2.68
15	What are the trends in harvesting of park resources?	2.49	2.87	2.68	commercial gathering (e.g. edible mushrooms)	2.23	3.00	3.00	2.65
21	How is sea level and ocean temperature changing?	3.00	2.00	2.50	intertidal zonation	2.62	1.00	3.00	2.62
14	Are climate associated ecotones	3.13	2.28	2.70	freshwater vegetation	2.00	1.00	3.00	2.62

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	changing through time?				boundaries				
17	What are the trends in diseases or parasites (including forest insects) through time?	2.92	2.42	2.67	nest parasites (cowbirds)	2.07	1.00	3.00	2.62
28	What are status and trends in fog?	2.61	1.77	2.19	air temperature	2.46	1.00	4.00	2.61
14	Are climate associated ecotones changing through time?	3.13	2.28	2.70	estuarine vegetation boundaries	1.93	1.00	3.00	2.61
13	What are status and trends in ground waters?	2.74	2.70	2.72	aquifers (depth, volume, variability)	2.77	2.00	2.00	2.59
13	What are status and trends in ground waters?	2.74	2.70	2.72	groundwater contaminants	2.76	4.00	2.00	2.58
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave water contaminants	2.69	4.00	3.00	2.55
4	What are status and trends in focal taxa groups?	3.38	3.15	3.26	mycorrhizae	1.92	2.00	1.00	2.54
13	What are status and trends in ground waters?	2.74	2.70	2.72	groundwater chemistry	2.52	4.00	2.00	2.54
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave water chemistry	2.59	4.00	3.00	2.53
29	What are status and trends in visibility?	1.89	2.16	2.03	visibility	2.58	4.00	4.00	2.53
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave water temperature	2.56	4.00	3.00	2.53
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave water flow	2.50	1.00	3.00	2.52
13	What are status and trends in ground waters?	2.74	2.70	2.72	hyporheic zones	2.41	1.00	2.00	2.51
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave ice dynamics	2.47	3.00	3.00	2.51
24	How are ocean and nearshore	2.77	2.00	2.38	Sea level (max & min	2.22	1.00	3.00	2.47

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	processes changing through time?				tides)				
17	What are the trends in diseases or parasites (including forest insects) through time?	2.92	2.42	2.67	diseased marine invertebrates	2.26	2.00	2.00	2.45
16	Have rates, extent, location, or types of erosional and depositional processes changed?	2.76	2.59	2.68	sheet erosion	2.19	1.00	2.00	2.44
19	How is cave air flow (quantity and quality) changing through time?	2.60	2.48	2.54	cave species composition	2.53	2.00	2.00	2.43
15	What are the trends in harvesting of park resources?	2.49	2.87	2.68	commercial hunting	2.10	3.00	2.00	2.43
20	What is timing and duration of key climate-related phenological events?	2.95	2.05	2.50	bird breeding	2.63	1.00	2.00	2.43
24	How are ocean and nearshore processes changing through time?	2.77	2.00	2.38	waves	1.95	0.00	3.00	2.42
20	What is timing and duration of key climate-related phenological events?	2.95	2.05	2.50	invertebrate hatching	2.50	1.00	2.00	2.40
23	What are status and trends in soils?	2.65	2.20	2.42	soil carbon	2.67	1.00	2.00	2.39
19	How is cave air flow (quantity and quality) changing through time?	2.60	2.48	2.54	mineral dissolution and accretion	2.28	2.00	2.00	2.38
17	What are the trends in diseases or parasites (including forest insects) through time?	2.92	2.42	2.67	animal carcasses	1.87	0.00	2.00	2.38
17	What are the trends in diseases	2.92	2.42	2.67	marine mammal	1.83	1.00	2.00	2.37

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
	or parasites (including forest insects) through time?				behavior				
23	What are status and trends in soils?	2.65	2.20	2.42	soil compaction	2.52	1.00	2.00	2.36
28	What are status and trends in fog?	2.61	1.77	2.19	Redwood growth and metabolism	2.21	3.00	3.00	2.36
27	What are the status and trends of biotoxin accumulation?	2.57	2.10	2.34	biotoxin accumulation in predators	2.77	1.00	2.00	2.35
28	What are status and trends in fog?	2.61	1.77	2.19	ocean temperatures	2.16	4.00	3.00	2.35
23	What are status and trends in soils?	2.65	2.20	2.42	soil fertility	2.36	1.00	2.00	2.33
23	What are status and trends in soils?	2.65	2.20	2.42	topsoil integrity	2.30	1.00	2.00	2.31
24	How are ocean and nearshore processes changing through time?	2.77	2.00	2.38	coastal morphology changes	2.42	1.00	2.00	2.31
25	What are the trends in pollinators?	2.75	2.00	2.38	pollinator composition	2.41	2.00	2.00	2.31
25	What are the trends in pollinators?	2.75	2.00	2.38	pollinator abundance	2.36	2.00	2.00	2.30
26	What are status and trends in subterranean water and ice?	2.43	2.29	2.36	cave aquatic species composition	2.33	2.00	2.00	2.28
29	What are status and trends in visibility?	1.89	2.16	2.03	light at night	2.26	1.00	3.00	2.27
23	What are status and trends in soils?	2.65	2.20	2.42	sheet erosion	1.87	1.00	2.00	2.23
28	What are status and trends in fog?	2.61	1.77	2.19	fog dynamics and distribution	2.48	1.00	2.00	2.21
23	What are status and trends in	2.65	2.20	2.42	soil biota	2.57	1.00	1.00	2.17

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
	soils?								
30	What are changes in extent of soil crust?	2.19	1.84	2.02	biological soil crust extent	2.70	1.00	2.00	2.15
31	What are the status and trends in subterranean geologic processes?	1.95	1.80	1.88	seismic activity	2.07	1.00	3.00	2.14
33	What is the effusion rate of geothermal groundwater into the surface environment?	1.55	1.32	1.43	geothermal groundwater temperature	2.13	3.00	4.00	2.09
24	How are ocean and nearshore processes changing through time?	2.77	2.00	2.38	nearshore currents	2.09	1.00	1.00	2.05
31	What are the status and trends in subterranean geologic processes?	1.95	1.80	1.88	sediment movement	2.57	1.00	2.00	2.04
31	What are the status and trends in subterranean geologic processes?	1.95	1.80	1.88	mineral dissolution and accretion	2.43	3.00	2.00	2.01
33	What is the effusion rate of geothermal groundwater into the surface environment?	1.55	1.32	1.43	geothermal groundwater chemistry	1.75	3.00	4.00	2.01
32	What are the status and trends in marine geologic processes?	2.00	1.54	1.77	coastal morphology changes	2.45	1.00	2.00	1.95
33	What is the effusion rate of geothermal groundwater into the surface environment?	1.55	1.32	1.43	geothermal groundwater flow	2.38	3.00	3.00	1.93
31	What are the status and trends in subterranean geologic processes?	1.95	1.80	1.88	cave wall fracture and collapse	2.00	3.00	1.00	1.73
31	What are the status and trends in subterranean geologic	1.95	1.80	1.88	weathering	2.00	1.00	1.00	1.73

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relavancy score	Legal mandate score	Feasibility cost score	Overall vital sign score
	processes?								
32	What are the status and trends in marine geologic processes?	2.00	1.54	1.77	sediment dynamics	2.16	1.00	1.00	1.69